



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,918	08/29/2003	Yasushi Ikeda	0425-1076P	7977

2292 7590 05/14/2008  
BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER
----------

WEBB, GREGORY E

ART UNIT	PAPER NUMBER
----------	--------------

1796

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

05/14/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/650,918	<b>Applicant(s)</b> IKEDA ET AL.	
	<b>Examiner</b> Gregory E. Webb	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-4 and 9-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-4 and 9-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 8/6/07 have been fully considered but they are not fully persuasive.
2. The examiner agrees the applicant's amendments fall within previously elected claim grouping.
3. The applicant's claims are now directed to a method of producing specific fatty acid esters for preparing a deinking composition.
4. The applicant's process consists of esterifying an alkylene oxide adduct of a polyhydric alcohol. The applicant also requires specific carboxylic acids, a specific temperature and a ratio of the hydroxyl value to the saponification value.
5. The prior art also teaches this process. For example in the Uphues reference ('082), the prior art teaches using the polyhydric alcohol, the alkylene oxide adduct, the carboxylic acid, and the temperature of the reaction (see claims 1 and 8). Although the prior art fails to teach the hydroxyl to saponification ratio, such ratios would be inherently as the prior art teaches the same reaction components and reaction conditions.
6. Similarly, Tadokoro ('392) also teaches the claimed esters and their method of manufacture. For example '392 teaches the following:

"The ester compound of the present invention may be obtained by carrying out of conventionally known esterification and adding of alkylene oxide. For example, a

Art Unit: 1796

mixture of a fatty acid and a polyhydric alcohol is, if necessary, admixed with an esterification catalyst and reacted at 150 to 250.degree. C. to obtain an ester compound (A), to which an alkylene oxide is added in the presence of an alkaline catalyst, whereby obtaining an alkylene oxide adduct (B). Alternatively, an esterification reaction may be carried out, after an alkylene oxide is added to a fatty acid or a polyhydric alcohol. Furthermore, it can be sometimes obtained by only adding an alkylene oxide to a fatty acid, too.

The average esterification degree of an ester compound in the present invention is more than 0. Preferably, per 1 mole of a polyhydric alcohol, OH in the alcohol has been esterified in an amount of 10 to 95% by equivalent. An alcohol has particularly preferably 1 to 2 moles of a fatty acid group per 1 mole of polyhydric alcohol."

7. Furthermore, Ikeda et al ('708) teaches the following method of producing the applicant's ester:

"This ester can be obtained by carrying out a publicly known esterifying reaction and alkylene oxide addition reaction. For example, a mixture of the fatty acid and the polyhydric alcohol is, if necessary an esterifying catalyst is added thereto, reacted at 150 to 250.degree. C. to obtain an ester. Further, an alkylene oxide having 2 to 4 carbon atoms is added thereto in the presence of an alkali catalyst or the like, to obtain the alkylene oxide-added ester. On the other hand, an alkylene oxide may be added to the fatty acid or the polyhydric alcohol to be

esterified. In some case, the ester can be obtained by only adding an alkylene oxide to the fatty acid.

About the average esterification degree of this ester, the OH groups of 1 mole of polyhydric alcohol are preferably substituted in a 10 to 95% equivalent. There is particularly preferable to have an ester group of 1 to 2 moles per mole of polyhydric alcohol.

When the alkylene oxide-added ester is used, the number of added moles of alkylene oxide (referred to as AO hereinafter) is on average from more than 0 mole to less than 12 moles, preferably from 0.1 to 6 moles, per mole of an ester. When a polyhydric alcohol, which can become an AO group, such as ethylene glycol, is used, the mole numbers thereof are also counted as the number of AO groups. The AO is preferably ethylene oxide (referred to as EO hereinafter) or propylene oxide (referred to as PO hereinafter). It is allowable to use EO or PO alone, or to use a mixture of EO and PO. In the present invention, it is particularly preferable to use the ester of the polyhydric alcohol comprising no AO group with the fatty acid.”

8. The examiner however does agree that several of the prior art reference fail to teach this specific process and as such these rejections are withdrawn. The following rejections, presented previously, are maintained.

***Claim Rejections - 35 USC § 102***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-4, and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Daute, Peter (US5442082).

Concerning the esterifying, carboxylic acid, fatty acid and the transesterification, Daute, Peter teaches the following:

Examples of unsaturated C.sub.10-22 **carboxylic acid** C.sub.1-18 alkyl esters, which may be obtained in known manner by **esterification** of the corresponding unsaturated **carboxylic acids** or by **transesterification** of the corresponding mono-, di- and/or triglycerides with C.sub.1-18 alkyl alcohols, for example methanol, ethanol, propanal, butanol, isobutanol, 2-ethyl hexanol, decanol and/or stearyl alcohol, are palmitoleic acid methyl ester, oleic acid methyl ester, oleic acid ethyl ester, oleic acid isobutyl ester, oleic acid 2-ethyl hexyl ester and/or oleic acid decyl ester and/or C.sub.10-22 **carboxylic acid** C.sub.1-18 alkyl ester mixtures having at least a high content of C.sub.10-22 **carboxylic acid** C.sub.1-18 alkyl esters containing at least one or two double bonds in the 9- and/or 13-position in the **carboxylic acid** residues, such as palm oil **fatty acid** methyl ester, soybean oil **fatty acid** methyl ester, soybean oil **fatty acid** 2-ethyl hexyl ester, rapeseed oil **fatty acid** methyl ester and/or **tallow fatty acid** ethyl ester. Particularly suitable mono-, di- and/or triglycerides containing OH-group-free, unsaturated C.sub.10-22 carboxylic acid residues with at least one or two double bonds in the 9- and/or 13-position are fats and/or oils of natural origin, of which the **carboxylic acid** content is mainly made up of unsaturated C.sub.10-22 **carboxylic acids** with at least one or two double bonds in the 9- and/or 13-position, preferably mainly of unsaturated C.sub.16-22 **carboxylic acids** with at least one or two double bonds in the 9- and/or 13-position, such as olive oil, linseed oil, sunflower oil, safflower oil, soybean oil, peanut oil, cottonseed oil, high-erucic and/or low-erucic rapeseed oil, palm oil, lard and/or **tallow**.  
(emphasis added)

Art Unit: 1796

Concerning the alkylene oxide, trihydric alcohol, polyhydric alcohol and the synthesis, Daute, Peter teaches the following:

The alkoxyated compounds according to the invention are produced by conventional organic **synthesis** methods, namely by **reaction** of epoxidized C.sub.10-22 carboxylic acid derivatives with C.sub.2-4 **alkylene oxides** in the presence of alkoxylation catalysts, for example sodium methylate and/or potassium hydroxide, and mono- and/or **polyhydric alcohols** at temperatures of preferably 150.degree. to 190.degree. C. and under pressures of preferably 3.multidot.10.sup.5 to 9.multidot.10.sup.5 Pa. The **alkylene oxides** are used in such quantities that the **alkylene oxide** content of the alkoxyated compounds obtained is preferably between 20 and 90% by weight and more preferably between 40 and 80% by weight. Ethylene oxide and/or **propylene oxide** are preferably used as the C.sub.2-4 alkylene oxides. Where **ethylene oxide** and **propylene oxide** are used, the two **alkylene oxides** may be added to the **reaction** mixture simultaneously or in succession. The mono- and/or **polyhydric alcohols** are preferably used in quantities of 0.1 to 2.0% by weight and more preferably in quantities of 0.2 to 1.0% by weight, based on one epoxide group. Suitable mono- and/or **polyhydric alcohols** are linear and/or branched C.sub.1-18 alkyl alcohols, for example methanol, ethanol and/or stearyl alcohol, optionally alkoxyated with 1 to 30 mol C.sub.2-4 **alkylene oxide** units, linear and/or branched alkanediols, for example ethylene glycol, propane-1,2-diol, propane-1,3-diol, butane-1,4-diol, hexane-1,6-diol and/or dodecane-1,12-diol, optionally alkoxyated with 1 to 30 mol C.sub.2-4 **alkylene oxide** units, **glycerol**, **diglycerol**, **polyglycerol**, trimethylol propane, pentaerythritol and/or sugar alcohols, such as mannitol and/or sorbitol. (*emphasis added*)

Concerning the deinking, Daute, Peter teaches the following:

(1) fiberizing said wastepaper in an aqueous alkaline **deinking** solution containing a **deinking** effective quantity of an alkoxyated compound prepared by reacting an epoxidized C.sub.10 -C.sub.22 carboxylic acid derivative with a C.sub.2 -C.sub.4 alkylene oxide in the presence of an alkaline alkoxylation catalyst and a polyhydric alcohol to detach ink particles from said wastepaper, and (*emphasis added*)

Claims 1-4, and 8-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Ikeda, Yasushi (US6599392).

Concerning the esterifying, alkylene oxide, carboxylic acid, fatty acid, polyhydric alcohol and the synthesis, Ikeda, Yasushi teaches the following:

Art Unit: 1796

The ester compound of the present invention may be obtained by carrying out of conventionally known **esterification** and adding of **alkylene oxide**. For example, a mixture of a **fatty acid** and a **polyhydric alcohol** is, if necessary, admixed with an **esterification** catalyst and reacted at 150 to 250.degree. C. to obtain an ester compound (A), to which an **alkylene oxide** is added in the presence of an alkaline catalyst, whereby obtaining an **alkylene oxide** adduct (B). Alternatively, an **esterification reaction** may be carried out, after an **alkylene oxide** is added to a **fatty acid** or a **polyhydric alcohol**. Furthermore, it can be sometimes obtained by only adding an **alkylene oxide** to a **fatty acid**, too. (*emphasis added*)

Concerning the trihydric alcohol, Ikeda, Yasushi teaches the following:

A polyhydric alcohol as a constituent of an ester compound in the present invention is preferably a 2- to 14-hydric alcohol having 2 to 24 carbon atoms in total which may contain an ether group. A 2-hydric (dihydric) alcohol may be one which has 2 to 10 carbon atoms in total and which may contain an ether group, such as propylene glycol, dipropylene glycol, butylene glycol, dibutylene glycol, ethylene glycol, diethylene glycol and polyethylene glycol. Then, 3-(tri) or more hydric alcohol may be one which has 3 to 24 carbon atoms in total, which may contain an ether group and wherein the total number of hydroxy group/the total number of carbon atoms=0.4 to 1 in one molecule, such as **glycerol**, poly(n=2 to 5)**glycerol**, pentaerythritol, dipentaerythritol, arabitol, sorbitol, stachyose, erythrite, arabite, mannite, glucose and sucrose. Preferably, there are ethylene glycol, diethylene glycol, propylene glycol, and an alcohol which has 3 to 12 carbon atoms in total, which may contain an ether group, wherein the total number of hydroxy group/the total number of carbon atoms=0.5 to 1 in one molecule, and which is 3- or more hydric alcohol. More preferably, there are **glycerol**, poly (n=2 to 4) **glycerol** and pentaerythritol. (*emphasis added*)

Concerning the deinking, Ikeda, Yasushi teaches the following:

A **deinked** pulp was obtained in the following manner. To feedstock waste papers collected in the city (newspaper/leaflet=70/30%) were added warm water, 1% (based on the feedstock) of sodium hydroxide (based by weight, this is true hereinafter), 3% (based on the feedstock) of sodium silicate, 3% (based on the feedstock) of a 30% aqueous hydrogen peroxide solution, and 0.3% (based on the feedstock) of EO/PO block adduct of beef tallow/glycerol (1:1), as a **deinking** agent, in which the amounts of EO and PO were respectively 70 and 10 (average number of moles added). The feedstock was brushed out and then subjected to flotation. The resultant slurry was washed with water and regulated to a concentration of 1% to prepare a **deinked** pulp slurry. This had a freeness of 220 ml. (*emphasis added*)



Art Unit: 1796

Claims 1-4, and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Ikeda, Yasushi (US6565708).

Concerning the esterifying, alkylene oxide, carboxylic acid, fatty acid, polyhydric alcohol and the synthesis, Ikeda, Yasushi teaches the following:

This ester can be obtained by carrying out a publicly known **esterifying reaction** and **alkylene oxide** addition **reaction**. For example, a mixture of the **fatty acid** and the **polyhydric alcohol** is, if necessary an **esterifying** catalyst is added thereto, reacted at 150 to 250.degree. C. to obtain an ester. Further, an **alkylene oxide** having 2 to 4 carbon atoms is added thereto in the presence of an alkali catalyst or the like, to obtain the **alkylene oxide**-added ester. On the other hand, an alkylene oxide may be added to the **fatty acid** or the **polyhydric alcohol** to be esterified. In some case, the ester can be obtained by only adding an **alkylene oxide** to the **fatty acid**. (*emphasis added*)

Concerning the trihydric alcohol, Ikeda, Yasushi teaches the following:

The polyhydric alcohol which composes a compound of (A8) or (A9) is preferably a 2- to 14-hydric alcohol which may have an ether group and wherein the total number of carbon atoms is 2 to 24; more preferably a 2- to 8-hydric alcohol; and particularly preferably a 3- to 6-hydric alcohol. The dihydric alcohol may be exemplified as an alcohol which may have an ether group and wherein the total number of carbon atoms is 2 to 10. For example, it is propylene glycol, dipropylene glycol, butylene glycol, dibutylene glycol, ethylene glycol, diethylene glycol or polyethylene glycol. The tri- or more-hydric alcohol may be exemplified as an alcohol which may have an ether group, wherein the total number of carbon atoms is 3 to 24 and wherein the total number of hydroxyl groups/the total number of carbon atoms in one molecule is 0.4 to 1. For example, it is **glycerol**, **polyglycerol** (average condensation degree: 2 to 5), pentaerythritol, dipentaerythritol, arabitol, sorbitol, stachyose, erythrite, mannite, glucose or sucrose. There may be more preferable ethylene glycol, diethylene glycol, polyethylene glycol or a tri- or more-hydric alcohol which may have an ether group, wherein the total number of carbon atoms is 3 to 12 and wherein the total number of hydroxyl groups/the total number of carbon atoms in one molecule is 0.5 to 1. There maybe particularly preferable **glycerol**, **polyglycerol** (average condensation degree: 2 to 4) or pentaerythritol. (*emphasis added*)

Concerning the deinking, Ikeda, Yasushi teaches the following:

From the viewpoint of conservation of the environment in earth, a reduction in the used amount of pulp is demanded. As a result, it has been

Art Unit: 1796

demanded to make paper light and to increase the blending amount of **deinked** pulp. However, paper obtained by merely reducing the amount of pulp in the paper becomes thin so that its opacity becomes low. Thus, its quality becomes poor. According to the lightening of paper based on reducing the amount of pulp, about paper for which stiffness in proportion to cube of thickness is required, such as paperboard, its stiffness is unfavorably lowered. On the other hand, if the blending ratio of **deinked** pulp is raised, brightness is lowered by **remaining ink** or the like in the **deinked** pulp. Moreover, the pulp itself becomes skinny in recycle process so that the thickness of the resultant paper is lowered. Thus, its opacity becomes low. Accordingly, if amount of the pulp in paper is reduced as well as the blending ratio of **deinked** pulp is raised, the opacity and the brightness of the obtainable paper are lowered still more. Further, it is not preferable that opacity of obtained paper is reduced still more, if brightness of **deinked** pulp which makes brightness low is raised by **deinking** and/or bleaching. (*emphasis added*)

Concerning the transesterification, Ikeda, Yasushi teaches the following:

TABLE 1 Standard Standard Standard improved improved improved  
Lyotropic bulky value brightness opacity Compound No. Name of  
compounds degree (%) (g/cm.sup.3) point point A-1 Methylpolysiloxane  
5.9 0.025 1.0 0.9 (Shin-Etsu silicone KF96A- 1000) A-2 Glycerol  
monolauryl ether 6.6 0.028 1.5 1.1 A-3 Stearic acid monoglyceride 5.7  
0.026 1.5 1.0 A-4 Pentaerythritol stearate 5.2 0.028 1.4 1.6 (average  
degree of **transesterification** being 45 equivalent-%) A-5 Sorbitan  
sesquioleate 5.4 0.023 1.3 1.4 A-6 Adduct to lauric acid 6.0 0.022 1.0 0.9  
monoglyceride with 0.4 mole of PO (*emphasis added*)

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325. The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregory E. Webb/  
Primary Examiner, Art Unit 1796

Gregory E. Webb  
Primary Examiner  
Art Unit 1796

gew